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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,936	07/08/2003	Donald J. Stavely	200208624-1	9263
22879 7590 06/08/2007 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER HERNANDEZ, NELSON D	
			ART UNIT 2622	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/614,936

Applicant(s)

STAVELY ET AL.

Examiner

Nelson D. Hernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 08 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 5, 8-11, 13 and 20-29 are rejected under 35 U.S.C. 102(e) as being anticipated by Morris et al., US Patent 6,665,010 B1.**

**Regarding claim 1,** Morris et al. discloses a method for counteracting lens vignetting (Col. 3, lines 8-52), comprising: resetting pixels of an image sensor (Col. 6, line 22 – col. 7, line 8); and reading pixels of the image sensor after they have been reset (Col. 6, line 22 – col. 7, line 8) such that the time between resetting and reading is greater for pixels adjacent edges of the sensor than for pixels adjacent a center of the sensor (Morris et al. discloses that the integration period of the sensor array is associated to the concentric brightness circles associated with the lens characteristics to capture the image so that different regions formed as a circle has different integration time. Morris et al. also discloses the effect caused by the lenses wherein the image produced has higher brightness in the inner circles compared to the outer circles. Therefore, Morris et al. inherently disclose that the time between resetting and reading

(integration time) is greater for pixels adjacent edges of the sensor than for pixels adjacent a center of the sensor) since the sensor would have longer integration time to the areas that are darker than the bright areas) (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50).

**Regarding claim 5**, Morris et al. discloses resetting all sensor pixels at substantially the same time (Col. 3, line 63 – col. 4, line 17).

**Regarding claim 8**, limitations can be found in claim 1.

**Regarding claim 9**, Morris et al. discloses reading pixels such that reading of pixels spaced from the center of the sensor is delayed relative to reading of pixels adjacent the center of the sensor so that exposure time for the pixels spaced from the center of the sensor is greater than for pixels adjacent the center of the sensor (as discussed in claim 1, Morris et al. discloses that the integration time is extended for the pixels in the areas outside the center of the sensor to correct the effect of having the concentric circles outside the center with less brightness than the circles in the center; col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50). Grounds for rejecting claim 1 apply here.

**Regarding claim 10**, Morris et al. discloses reading selected pixels of selected lines so as to form a curved read line representative of progression of pixel reading across the sensor by teaching that the pixels would reset at the same time (Col. 3, line 63 – col. 4, line 17) and then read-out based on the position according to the brightness

circles (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8). Therefore, since the pixels are reset at the same time and read-out according to the circles, the read-out is performed so that it forms a curved read line (circle) representative of the progression of pixel reading across the sensor starting for the pixels in the center of the sensor and finishing at the edges of the sensor. Grounds for rejecting claim 1 apply here.

**Regarding claim 11**, Morris et al. discloses reading pixels such that pixels are reset and read with a varying relative speed of progression (Morris et al. discloses resetting the pixels at the same time and that the read-out is performed based on the integration time assigned to each region (Col. 3, line 63 – col. 4, line 17), wherein the regions are defined based on the brightness circles associated with a lens wherein said circles are brighter in the center than in the edges (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44), this teaches that the and pixels are reset and read with a varying relative speed of progression. Grounds for rejecting claim 1 apply here.

**Regarding claim 13**, Morris et al discloses that the exposure times are increased for the sensor pixels as a function of their distance from the center of the sensor in both a horizontal and a vertical direction (col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8).

**Regarding claim 20**, limitations have been discussed and analyzed in claim 1.

**Regarding claim 21**, Morris et al. discloses that the image sensor comprises a complimentary metal oxide semiconductor (CMOS) sensor (Col. 4, line 53 – col. 5, line 10; col. 6, lines 22-59).

**Regarding claim 22**, Morris et al. discloses that the logic is configured to read pixels in a manner in which pixel exposure time increases as a function of distance from the center of the sensor. (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8).

**Regarding claim 23**, limitations can be found in claim 9.

**Regarding claim 24**, limitations can be found in claim 11.

**Regarding claim 25**, Morris et al discloses a system for counteracting lens vignetting (Col. 3, lines 8-52), comprising: means for collecting light (Fig. 5: 140 and fig. 12: 140); and means (row decoder 121 and column decoder 122 in conjunction with capacitor 183 as shown in fig. 5) for reading the means for collecting light, the means for reading being configured to read such that an exposure time for portions of the means for collecting light adjacent its center is less than an exposure time for portions of the means for collecting light data adjacent its edges (Morris et al. discloses that the integration period of the sensor array is associated to the concentric brightness circles associated with the lens characteristics to capture the image so that different regions formed as a circle has different integration time. Morris et al. also discloses the effect caused by the lenses wherein the image produced has higher brightness in the inner circles compared to the outer circles. Therefore, Morris et al. inherently disclose that the time between resetting and reading (integration time) is greater for pixels adjacent edges of the sensor than for pixels adjacent a center of the sensor) since the sensor would have longer integration time to the areas that are darker than the bright areas)

(Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50).

**Regarding claim 26**, Morris et al. discloses that the means for collecting light data comprise a complimentary metal oxide semiconductor (CMOS) sensor that includes a plurality of randomly-addressable pixels (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50).

**Regarding claim 27**, limitations can be found in claim 25.

**Regarding claim 28**, Morris et al. discloses a digital camera (Fig. 12), comprising: a lens system (Fig. 12: 260); a solid-state image sensor (Fig. 12: 140) that receives light transmitted by the lens system, the image sensor including a plurality of randomly-accessible pixels (Fig. 5: 118); and a counter-vignetting algorithm (Col. 3, lines 8-52) that is configured to reset sensor pixels and then read the reset pixels in a manner in which the time between resetting and reading, and therefore pixel exposure, is greater for pixels adjacent edges of the sensor than for pixels adjacent a center of the sensor (Morris et al. discloses that the integration period of the sensor array is associated to the concentric brightness circles associated with the lens characteristics to capture the image so that different regions formed as a circle has different integration time. Morris et al. also discloses the effect caused by the lenses wherein the image produced has higher brightness in the inner circles compared to the outer circles. Therefore, Morris et al. inherently disclose that the time between resetting and reading (integration time) is greater for pixels adjacent edges of the sensor than for pixels

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adjacent a center of the sensor) since the sensor would have longer integration time to the areas that are darker than the bright areas) (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50).

**Regarding claim 29**, limitations can be found in claim 13.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 2, 3, 6, 12, 15, 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al., US Patent 6,665,010 B1 in view of Mizutani et al., US 2003/0090583 A1.**

**Regarding claim 2**, Morris et al. does not explicitly disclose resetting pixels on a line-by-line basis across the image sensor.

However, Mizutani et al. teaches a photosensor system performing sensitivity adjustment wherein the pixels are reset on a line-by-line basis beginning from one edge of the photosensor and ending at an opposite end of the photosensor, and wherein said pixels are read also on a line-by-line basis starting from one edge of the photosensor to and ending at an opposite edge of the sensor (See figs. 4 and 6) at a time adjusted so that the integration time of the pixels is changed across the image sensor in order to



accumulate charge based on the brightness of the subject being photographed so that the areas less bright receive more charge than the brighter areas (page 3, ¶ 0036-0038; page 4, ¶ 0043-0045; page 5, ¶ 0086-0088; page 6, ¶ 0089-0101; page 9, 0145).

Therefore, taking the combined teaching of Morris et al. in view of Mizutani et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morris et al. by resetting pixels on a line-by-line basis across the image sensor. The motivation to do so would have been to maximize the dynamic range to the photosensor array as suggested by Mizutani et al. (page 6, ¶ 0099).

**Regarding claim 3**, limitations can be found in claim 2.

**Regarding claim 6**, limitations can be found in claim 2.

**Regarding claim 12**, the combined teaching of Morris et al. in view of Mizutani et al. as discussed and analyzed in claim 2 teaches resetting pixels at a constant reset rate (As shown in Mizutani et al., in figs. 4 and 6, the pixels are reset at a constant reset rate) and adjusting the speed at which pixels are read (Morris et al. discloses adjusting the integration time based on the concentric circles of the lens such that the areas outside the center would have longer integration time such that a pixel reading rate is higher adjacent the center of the sensor as compared to adjacent edges of the sensor (col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8); Mizutani et al., in figs. 4 and 6 teaches that the read pulse is increasing from certain row in the image sensor to the last one to perform the read out). Grounds for rejecting claim 2 apply here.

**Regarding claim 15**, Morris et al. discloses a method for counteracting lens vignetting (Col. 3, lines 8-52), comprising: resetting pixels of an image sensor (Col. 6, line 22 – col. 7, line 8); and reading pixels of the image sensor after they have been reset (Col. 6, line 22 – col. 7, line 8), wherein the pixels are read such that: relative to a direction of progression across the image sensor, reading of pixels spaced from a center of the image sensor is delayed relative to reading of pixels adjacent the center of the sensor such that exposure time for pixels spaced from the center of the sensor is greater than for pixels adjacent the center of the sensor (Morris et al. discloses that the integration period of the sensor array is associated to the concentric brightness circles associated with the lens characteristics to capture the image so that different regions formed as a circle has different integration time. Morris et al. also discloses the effect caused by the lenses wherein the image produced has higher brightness in the inner circles compared to the outer circles. Therefore, Morris et al. inherently disclose that relative to a direction of progression across the image sensor, reading of pixels spaced from a center of the image sensor is delayed relative to reading of pixels adjacent the center of the sensor such that exposure time (integration time) for pixels spaced from the center of the sensor is greater than for pixels adjacent the center of the sensor since the sensor would have longer integration time to the areas that are darker than the bright areas), and pixels are reset and read with a varying relative speed of progression such that a pixel reading rate is higher adjacent the center of the sensor as compared to adjacent edges of the sensor (Morris et al. discloses resetting the pixels at the same time and that the read-out is performed based on the integration time assigned to each

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region (Col. 3, line 63 – col. 4, line 17), wherein the regions are defined based on the brightness circles associated with a lens wherein said circles are brighter in the center than in the edges (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44), this teaches that the and pixels are reset and read with a varying relative speed of progression such that a pixel reading rate is higher adjacent the center of the sensor as compared to adjacent edges of the sensor (Col. 3, lines 8-52; col. 4, line 53 – col. 5, line 10; col. 5, lines 31-44; col. 6, line 22 – col. 7, line 8; col. 7, lines 32-49; col. 8, lines 20-50).

Morris et al does not explicitly disclose that the pixels are reset in a line-by-line manner.

However, Mizutani et al. teaches a photosensor system performing sensitivity adjustment wherein the pixels are reset on a line-by-line basis beginning from one edge of the photosensor and ending at an opposite end of the photosensor, and wherein said pixels are read also on a line-by-line basis starting from one edge of the photosensor to and ending at an opposite edge of the sensor (See figs. 4 and 6) at a time adjusted so that the integration time of the pixels is changed across the image sensor in order to accumulate charge based on the brightness of the subject being photographed so that the areas less bright receive more charge than the brighter areas (page 3, ¶ 0036-0038; page 4, ¶ 0043-0045; page 5, ¶ 0086-0088; page 6, ¶ 0089-0101; page 9, 0145).

Therefore, taking the combined teaching of Morris et al. in view of Mizutani et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morris et al. by resetting pixels on a line-by-line basis

across the image sensor. The motivation to do so would have been to maximize the dynamic range to the photosensor array as suggested by Mizutani et al. (page 6, ¶ 0099).

**Regarding claim 16**, limitations can be found in claim 3.

**Regarding claim 18**, limitations can be found in claim 13.

**Regarding claim 19**, limitations can be found in claim 13.

**5. Claims 7, 14 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al., US Patent 6,665,010 B1 in view of Takayama et al., US Patent 7,088,395 B2.**

**Regarding claim 7**, Morris et al. does not explicitly disclose reading pixels beginning from the center of the sensor and ending at opposite edges of the sensor..

However, Takayama et al. teaches the concept of reading out the pixels in a photosensor starting from the center of the photosensor and ending at the edges of the sensor and that the reading can be performed as a spiral reading mode starting from the center of the photosensor with the purpose of reading out first the object of importance in the scene in order to perform an appropriate exposure to the subject being photographed which is liable to be located at the center of the image (Col. 12, line 58 – col. 13, line 3; Col. 32, lines 4-15).

Therefore, taking the combined teaching of Morris et al. in view of Takayama et al. as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Morris et al. by reading pixels beginning from the

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center of the sensor and ending at opposite edges of the sensor. The motivation to do so would have been to read out first the object of importance in the scene in order to perform an appropriate exposure to the subject being photographed which is liable to be located at the center of the image as suggested by Takayama et al. (Col. 12, line 58 – col. 13, line 3; Col. 32, lines 4-15).

**Regarding claims 14 and 30**, limitations can be found in claim 7.

**6. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris et al., US Patent 6,665,010 B1 in view of Mizutani et al., US 2003/0090583 A1 and further in view of Takayama et al., US Patent 7,088,395 B2.**

**Regarding claim 4**, the combined teaching of Morris et al. in view of Mizutani et al. fails to teach resetting pixels beginning from the center of the sensor and ending at opposite edges of the sensor.

However, Takayama et al. teaches the concept of reading out the pixels in a photosensor starting from the center of the photosensor and ending at the edges of the sensor and that the reading can be performed as a spiral reading mode starting from the center of the photosensor with the purpose of reading out first the object of importance in the scene in order to perform an appropriate exposure to the subject being photographed which is liable to be located at the center of the image (Col. 12, line 58 – col. 13, line 3; Col. 32, lines 4-15).

Therefore, taking the combined teaching of Morris et al. in view of Mizutani et al. and further in view of Takayama et al. as a whole, it would have been obvious to one of

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ordinary skill in the art at the time the invention was made to modify Morris et al. and Mizutani et al. by reading pixels beginning from the center of the sensor and ending at opposite edges of the sensor. The motivation to do so would have been to read out first the object of importance in the scene in order to perform an appropriate exposure to the subject being photographed which is liable to be located at the center of the image as suggested by Takayama et al. (Col. 12, line 58 – col. 13, line 3; Col. 32, lines 4-15).

**Regarding claims 17**, limitations can be found in claim 4.

### ***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (571) 272-7311. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson D. Hernandez  
Examiner  
Art Unit 2622

NDHH  
May 18, 2007



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